20T220"9hST80DT

FIG. 1A (PRIOR ART)

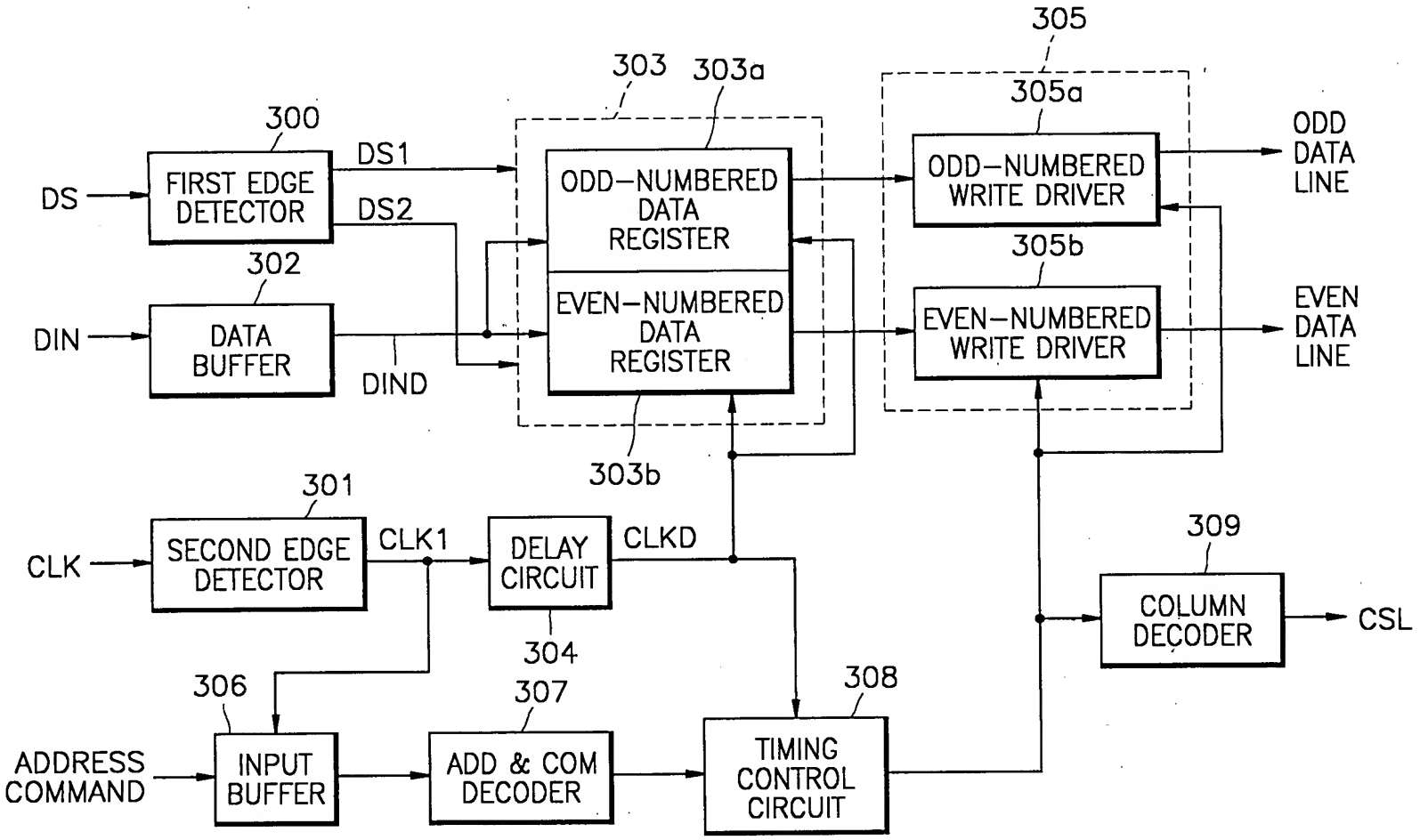

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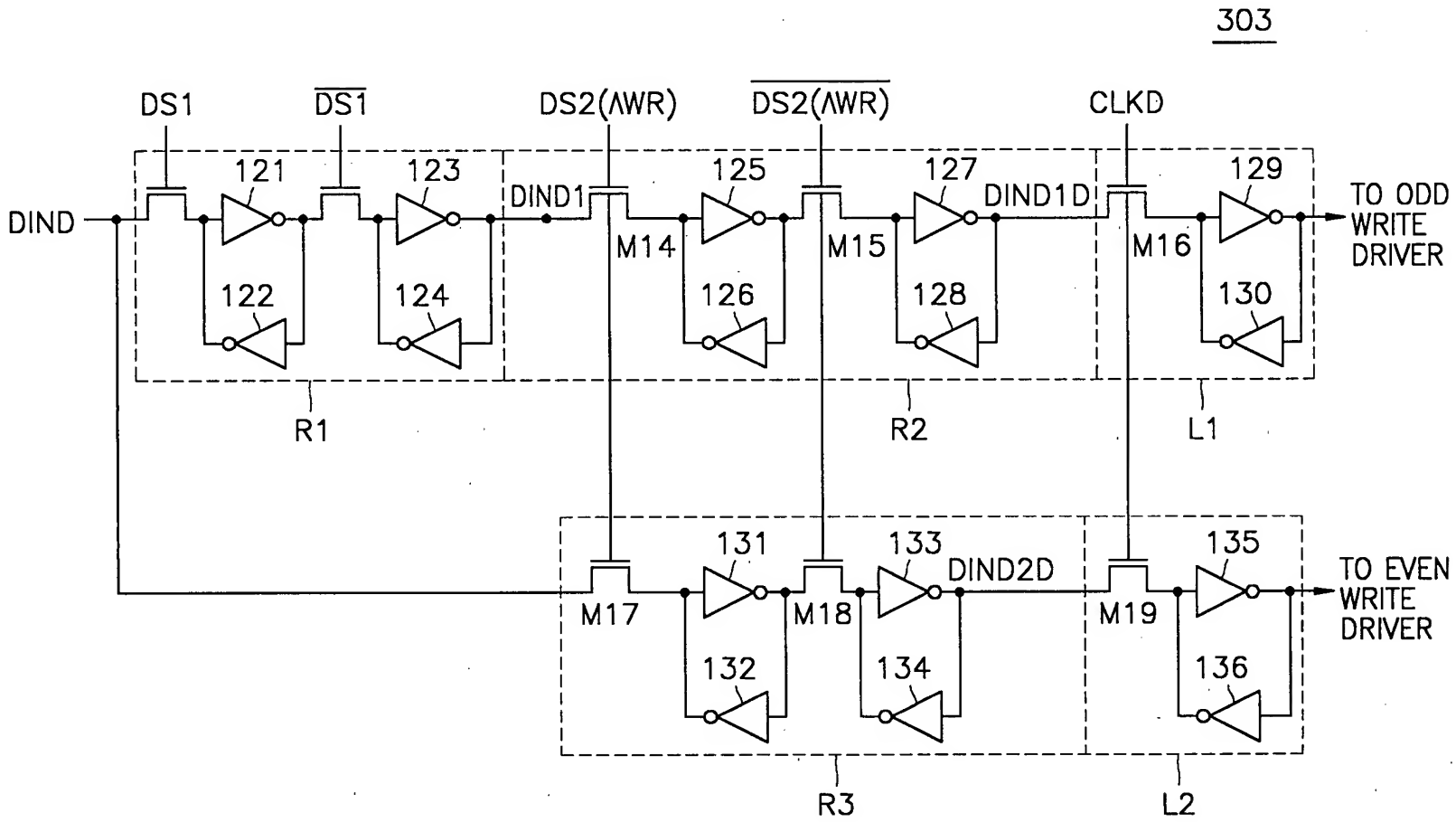
FIG. 1B (PRIOR ART)



# FIG. 2 (PRIOR ART)

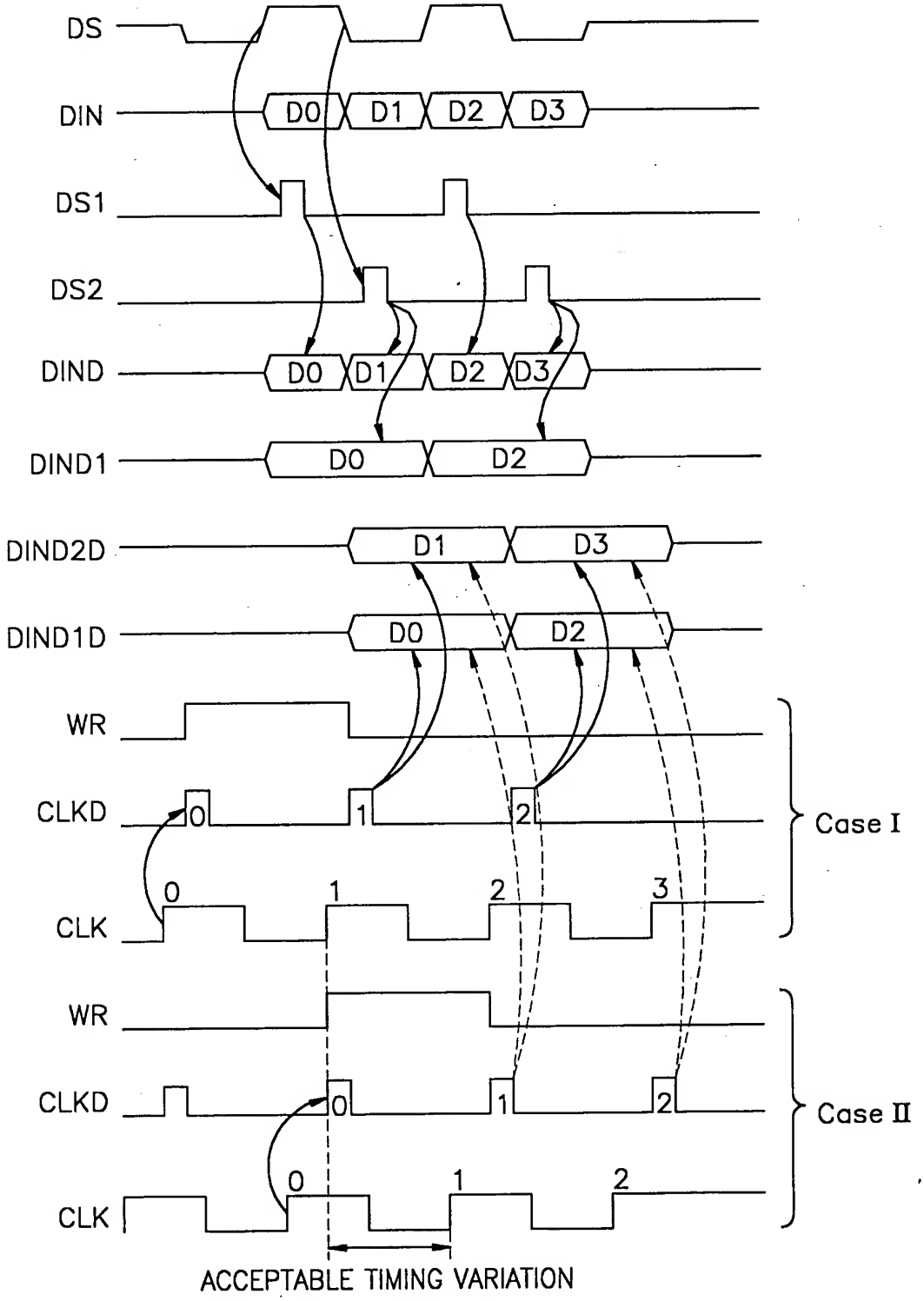


FIG. 3

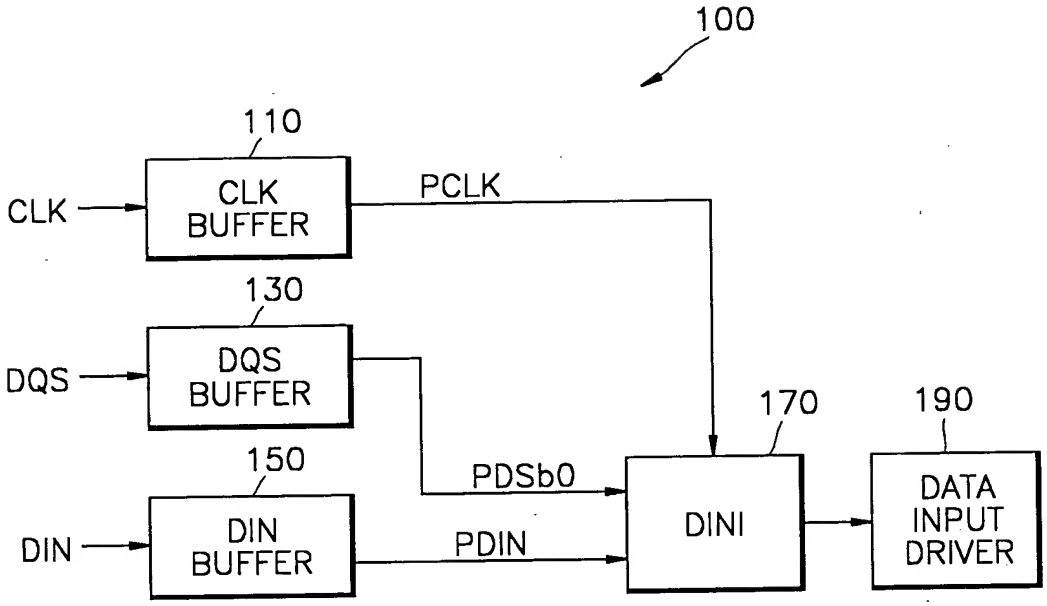

100
110
CLK
CLK BUFFER
PCLK
130
DQS
DQS BUFFER
170
190
150
PDSb0
DIN
DIN BUFFER
PDIN
DINI
DATA INPUT DRIVER

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FIG. 4

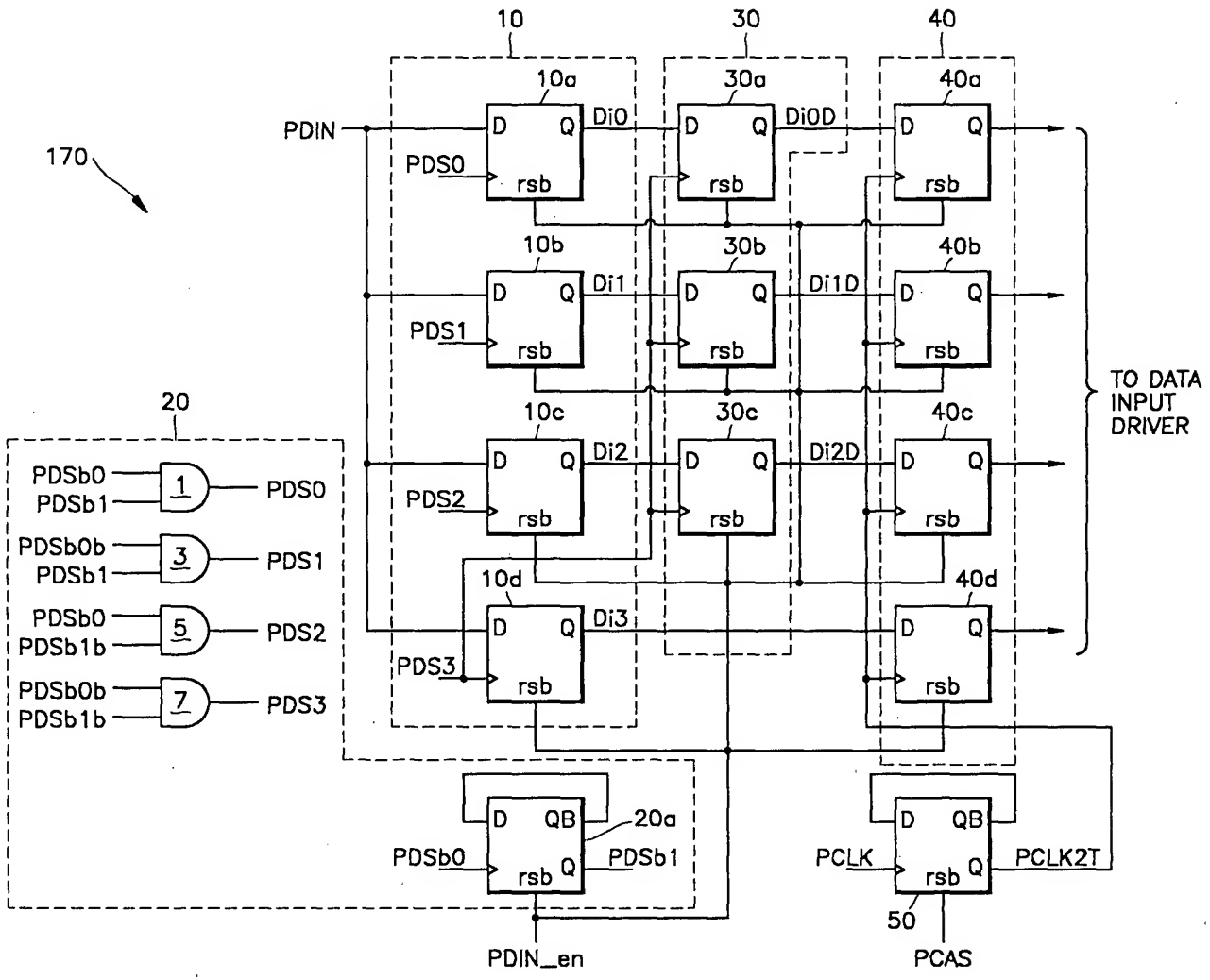

FIG. 5

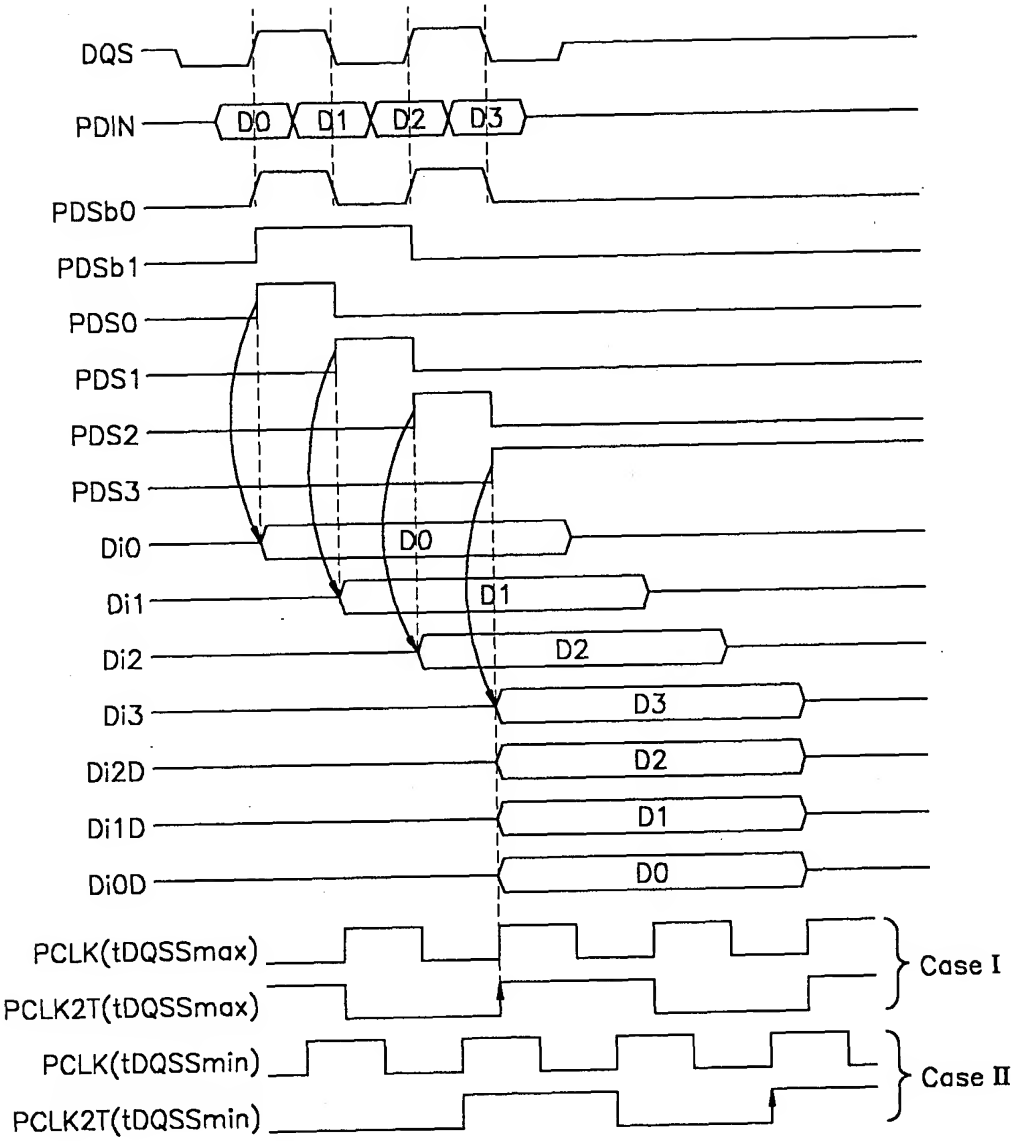
DQS
PDIN
D0
D1
D2
D3
PDSb0
PDSb1
PDS0
PDS1
PDS2
PDS3
Di0
Di1
Di2
Di3
Di2D
Di1D
Di0D
D0
D1
D2
D3
D2
D1
D0
PCLK(tDQSSmax)
PCLK2T(tDQSSmax)
PCLK(tDQSSmin)
PCLK2T(tDQSSmin)
Case I
Case II

FIG. 6

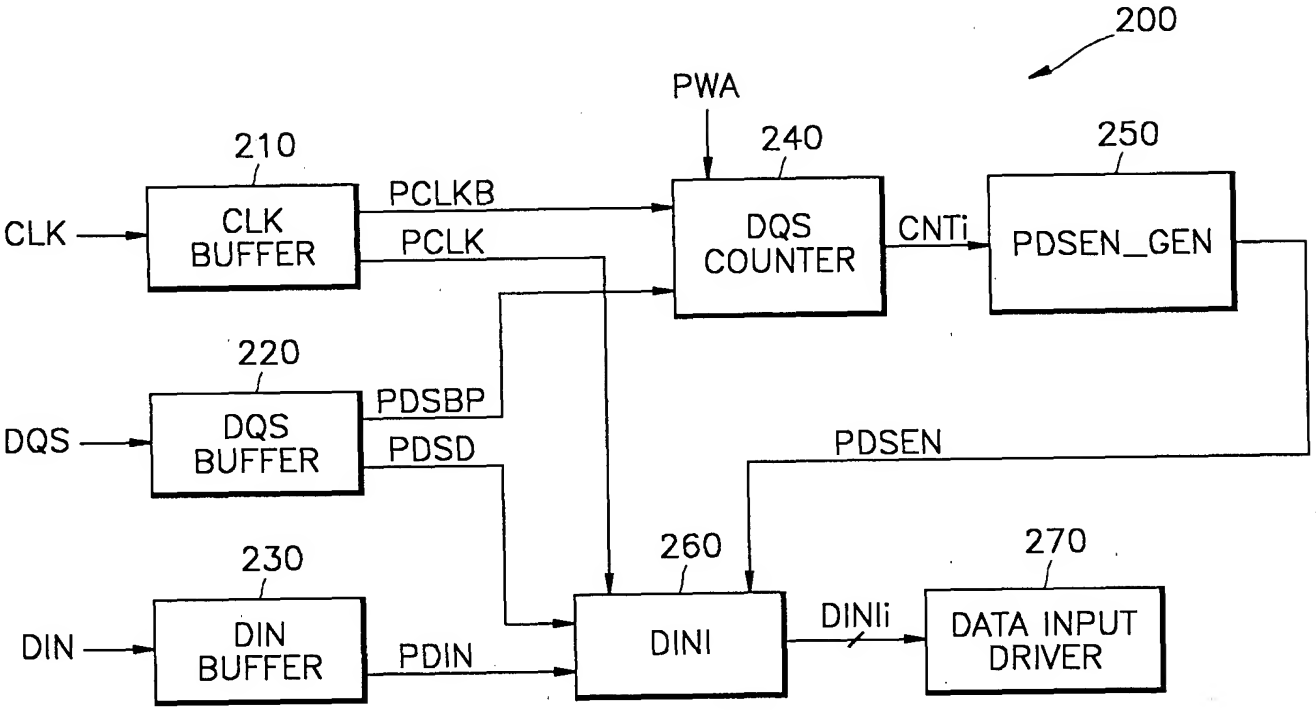
200
PWA
210
240
250
CLK
CLK BUFFER
PCLKB
PCLK
DQS COUNTER
CNTi
PDSEN_GEN
220
DQS
DQS BUFFER
PDSBP
PDSD
PDSEN
230
260
270
DIN
DIN BUFFER
PDIN
DINI
DINIi
DATA INPUT DRIVER

FIG. 7

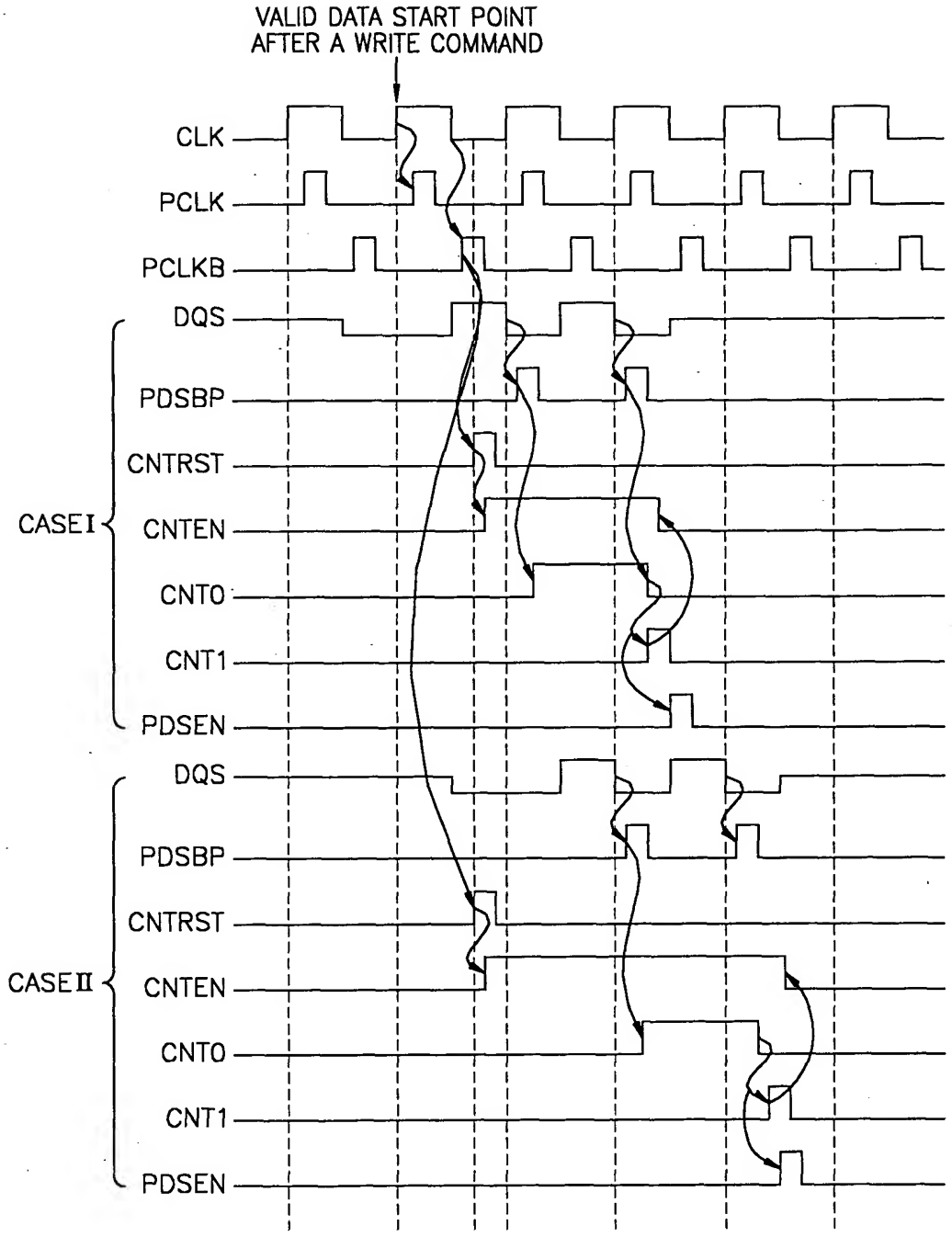
VALID DATA START POINT
AFTER A WRITE COMMAND
CLK
PCLK
PCLKB
DQS
PDSBP
CNTRST
CNTEN
CNT0
CNT1
PDSEN
CASE I
DQS
PDSBP
CNTRST
CNTEN
CNT0
CNT1
PDSEN
CASE II

FIG. 8

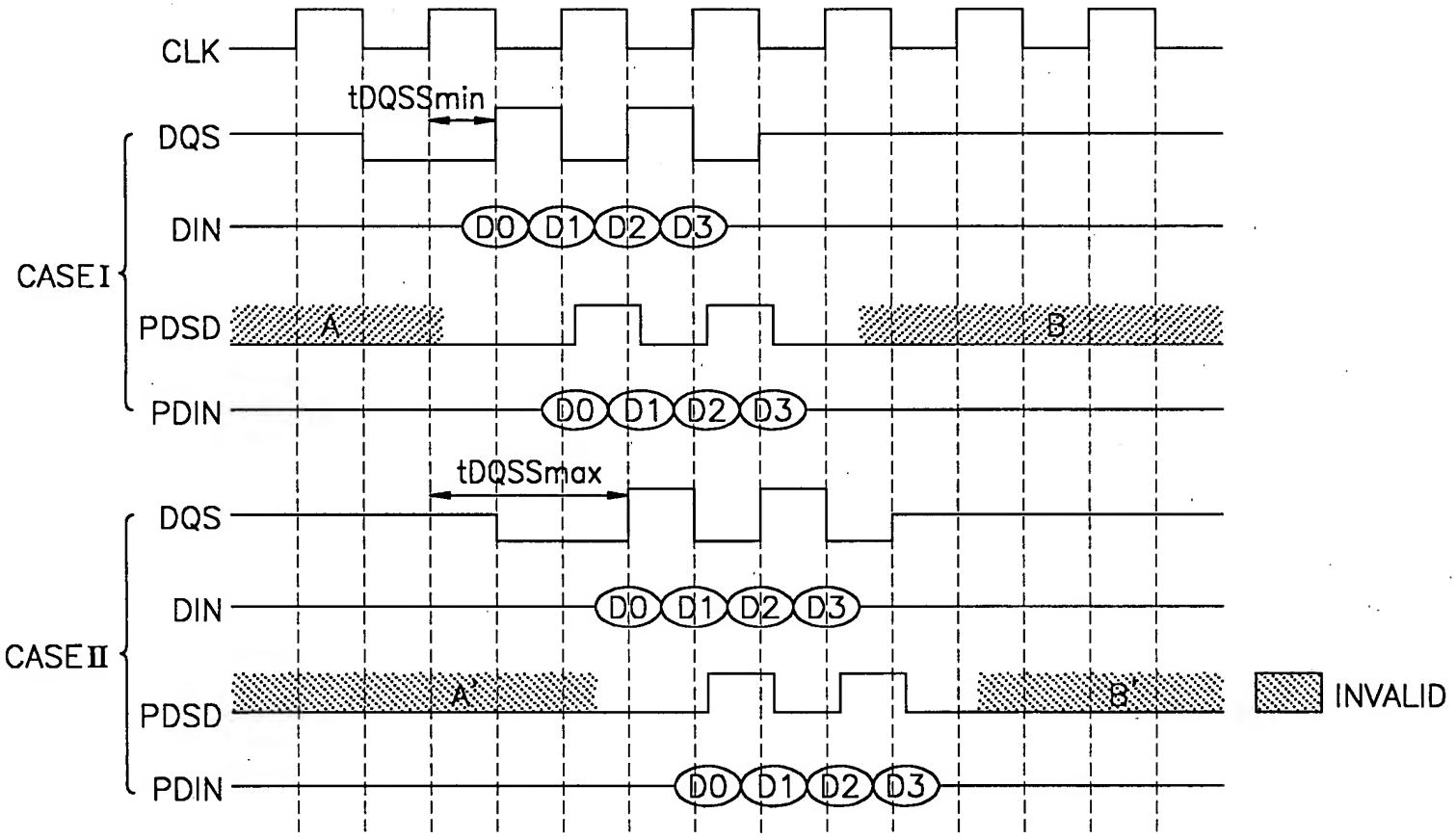
CLK
tDQSSmin
DQS
DIN
D0 D1 D2 D3
CASE I
PDSD
A
B
PDIN
D0 D1 D2 D3
tDQSSmax
DQS
DIN
D0 D1 D2 D3
CASE II
PDSD
A'
B'
PDIN
D0 D1 D2 D3
INVALID

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FIG. 9A

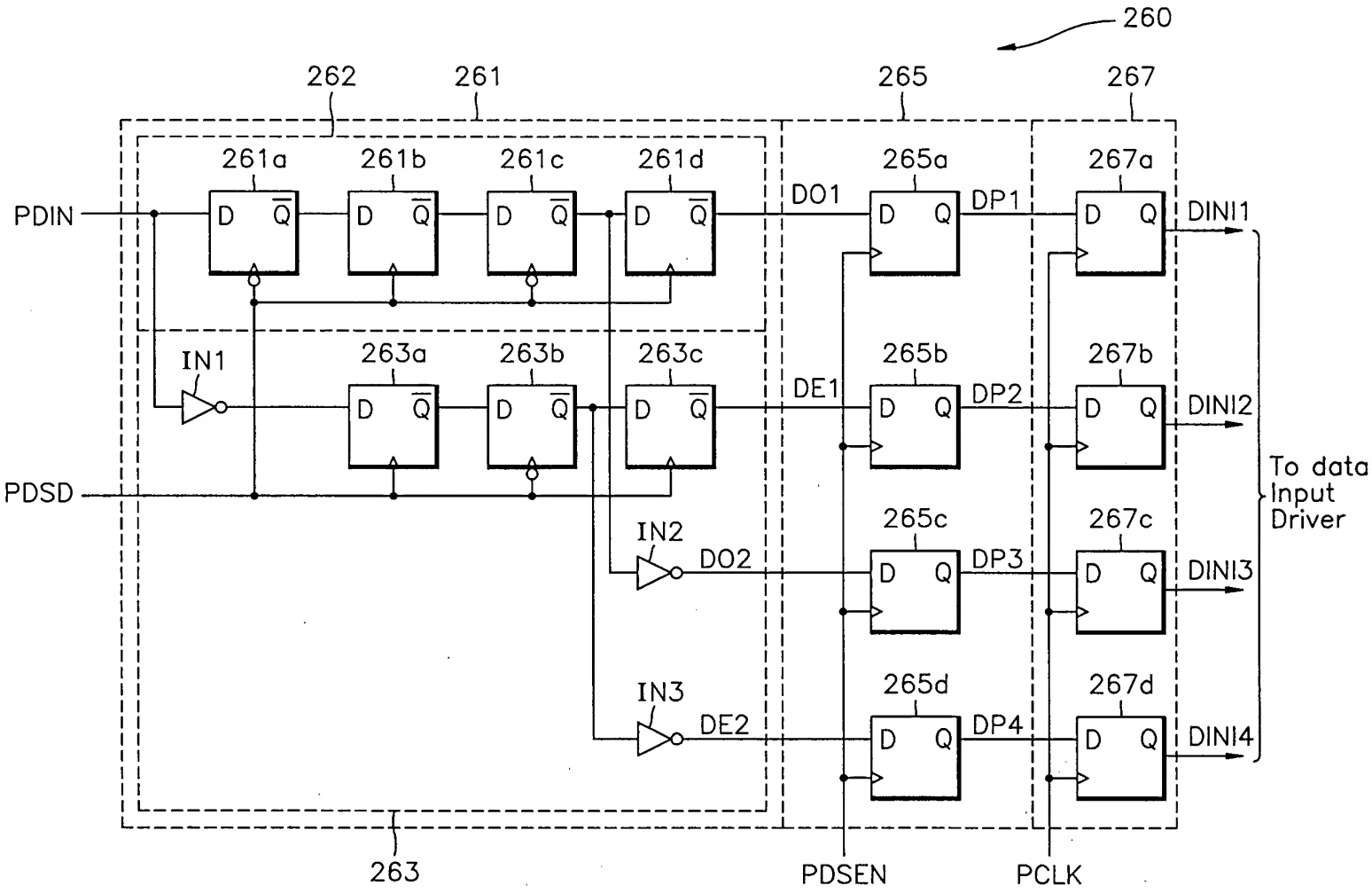


FIG. 9B

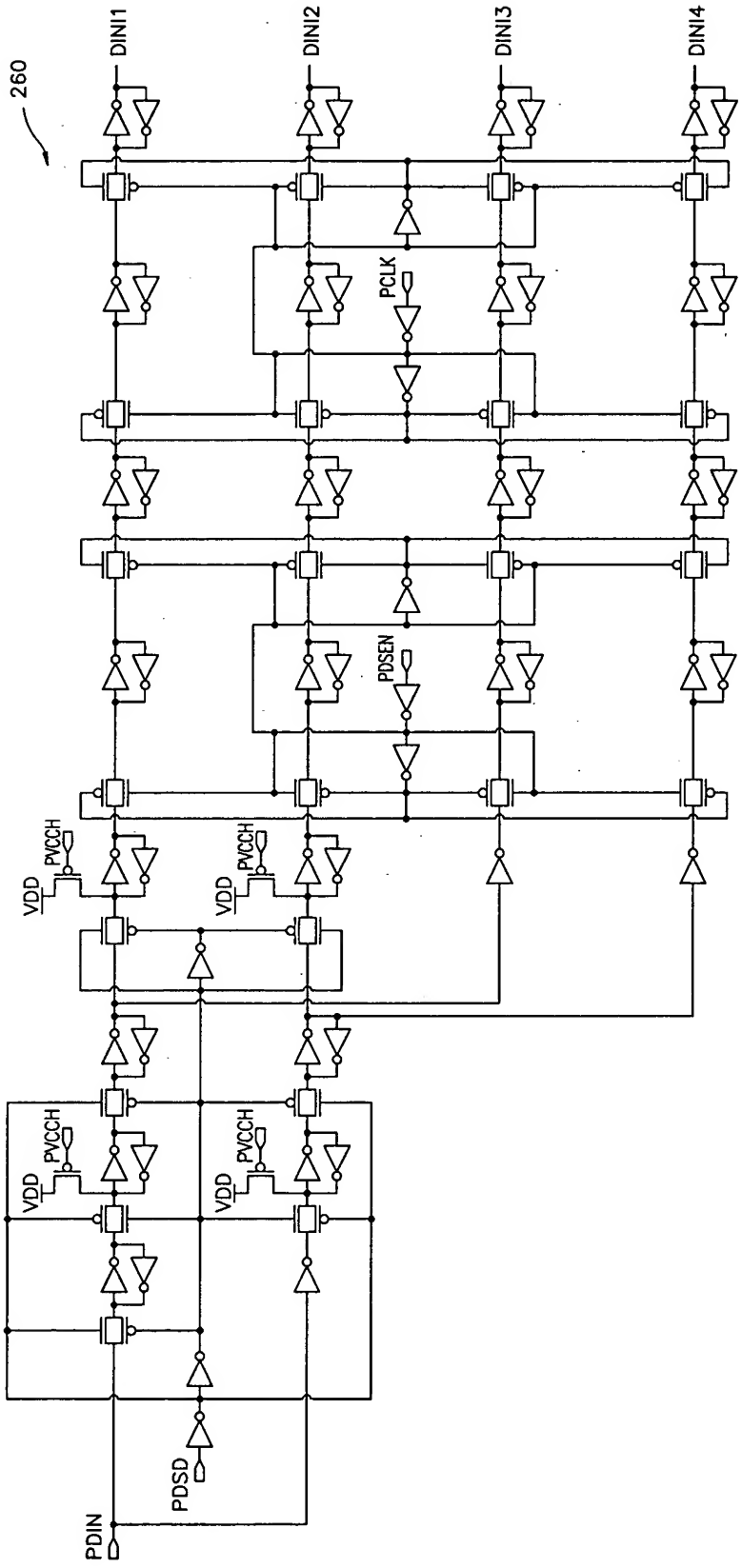
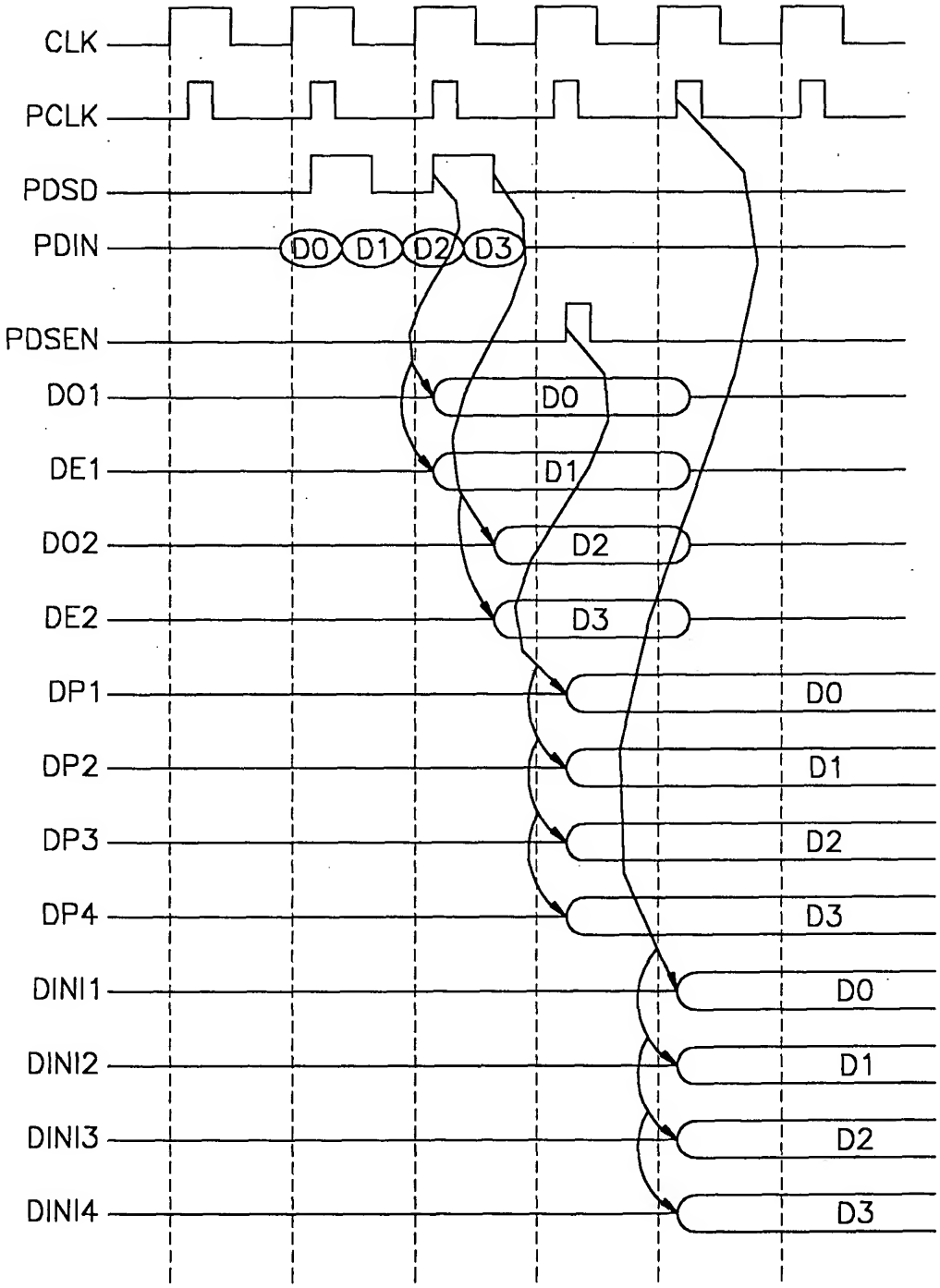


FIG. 10


CLK
PCLK
PDSD
PDIN
D0
D1
D2
D3
PDSEN
DO1
D0
DE1
D1
DO2
D2
DE2
D3
DP1
D0
DP2
D1
DP3
D2
DP4
D3
DINI1
D0
DINI2
D1
DINI3
D2
DINI4
D3